Complete Summary

GUIDELINE TITLE

Community-acquired pneumonia in adults.

BIBLIOGRAPHIC SOURCE(S)

Institute for Clinical Systems Improvement (ICSI). Community-acquired pneumonia in adults. Bloomington (MN): Institute for Clinical Systems Improvement (ICSI); 2003 Dec. 42 p. [46 references]

COMPLETE SUMMARY CONTENT

SCOPE

DISEASE/CONDITION(S)

Community-acquired pneumonia

GUIDELINE CATEGORY

Diagnosis
Evaluation
Management
Risk Assessment
Treatment

CLINICAL SPECIALTY

Family Practice
Infectious Diseases
Internal Medicine
Pulmonary Medicine

INTENDED USERS

Advanced Practice Nurses
Allied Health Personnel
Health Care Providers
Health Plans
Hospitals
Managed Care Organizations
Nurses
Physician Assistants
Physicians

GUIDELINE OBJECTIVE(S)

- To provide recommendations for the diagnosis and treatment of community-acquired pneumonia in patients 16 years of age and older
- To provide recommendations for outpatient management and indications for hospitalization, taking into consideration ongoing changes in antibiotic resistance

TARGET POPULATION

Patients 16 years and older with community-acquired pneumonia in an outpatient setting

This guideline excludes pneumonia acquired in nursing homes or other institutions, aspiration pneumonia, human immunodeficiency virus (HIV) infection, and pneumonia in immunocompromised patients.

INTERVENTIONS AND PRACTICES CONSIDERED

Diagnosis

1. Physical examination
2. Medical history
3. Chest x-ray
    - Decubitus film (if pleural effusion present)
    - Thoracentesis
4. Assessment of clinical signs suggestive of lower respiratory tract infection (temperature, pulse, respiratory sounds, rales, respiratory rate)
5. Laboratory tests
    - Sputum gram stain and culture
    - pH, blood urea nitrogen (BUN), sodium, glucose, hemoglobin, PO_2, pleural effusion
6. Assessment of patient risk for community-acquired pneumonia-related morbidity and mortality using a 2-step prediction rule based on patient age; comorbidities (neoplastic disease, liver disease, congestive heart failure, cerebrovascular disease, renal disease); physical exam findings (mental status, pulse, respiratory rate, systolic blood pressure, temperature); and laboratory findings

Treatment

1. Hospitalization
2. Outpatient Treatment
    - First-line antibiotics for younger patients with no comorbidities:
        - Macrolides such as azithromycin (e.g., Zithromax) or clarithromycin (e.g., Biaxin)
        - Note: increasing resistance to doxycycline in Streptococcus pneumoniae limits the usefulness of this agent.
    - First-line antibiotics for patients of older age and/or other comorbidities or risk factors
        - Amoxicillin/clavulanate (e.g., Augmentin) + macrolide
        - Cefuroxime axetil (Ceftin)/cefpodoxime (Vantin)/cefprozil + macrolide
        - Fluoroquinolones (e.g., levofloxacin)
    - Fluoroquinolones as second line antibiotic treatment for patients in either age group with drug intolerance
3. Patient education
4. Follow-up

MAJOR OUTCOMES CONSIDERED

Diagnosis

Diagnostic test performance, as measured by sensitivity, specificity, predictive value (positive and negative), and accuracy

Risk Stratification via Prediction Rule

- 30-day hospital mortality
- Overall mortality
- Length of hospital stay and need for intensive care unit admission
- Late admissions to hospital
- Functional status
- Time to return to work or normal routine
- Patient satisfaction

Treatment

- Resolution of symptoms (e.g., cough and fever)
- Presence of lung abnormalities
- Prevalence of side effects
- Occurrence of first exacerbation
- Time to return to work or normal routine

METHODOLOGY

METHODS USED TO COLLECT/SELECT EVIDENCE

Searches of Electronic Databases

DESCRIPTION OF METHODS USED TO COLLECT/SELECT THE EVIDENCE

Not stated

NUMBER OF SOURCE DOCUMENTS

Not stated

METHODS USED TO ASSESS THE QUALITY AND STRENGTH OF THE EVIDENCE

Weighting According to a Rating Scheme (Scheme Given)

RATING SCHEME FOR THE STRENGTH OF THE EVIDENCE

Key conclusions (as determined by the work group) are supported by a conclusion grading worksheet that summarizes the important studies pertaining to the conclusion. Individual studies are classed according to the system presented below, and are designated as positive, negative, or neutral to reflect the study quality.

Conclusion Grades:

Grade I: The evidence consists of results from studies of strong design for answering the question addressed. The results are both clinically important and consistent with minor exceptions at most. The results are free of any significant doubts about generalizability, bias, and flaws in research design. Studies with negative results have sufficiently large samples to have adequate statistical power.

Grade II: The evidence consists of results from studies of strong design for answering the question addressed, but there is some uncertainty attached to the conclusion because of inconsistencies among the results from the studies or because of minor doubts about generalizability, bias, research design flaws, or adequacy of sample size. Alternatively, the evidence consists solely of results from weaker designs for the question addressed, but the results have been confirmed in separate studies and are consistent with minor exceptions at most.

Grade III: The evidence consists of results from studies of strong design for answering the question addressed, but there is substantial uncertainty attached to the conclusion because of inconsistencies among the results of different studies or because of serious doubts about generalizability, bias, design flaws, or adequacy of sample size. Alternatively, the evidence consists solely of results from a limited number of studies of weak design for answering the question addressed.

Grade Not Assignable: There is no evidence available that directly supports or refutes the conclusion.

Study Quality Designations:

The quality of the primary research reports and systematic reviews are designated in the following ways on the conclusion grading worksheets:

Positive: indicates that the report or review has clearly addressed issues of inclusion/exclusion, bias, generalizability, and data collection and analysis.

Negative: indicates that these issues (inclusion/exclusion, bias, generalizability, and data collection and analysis) have not been adequately addressed.

Neutral: indicates that the report or review is neither exceptionally strong nor exceptionally weak.

Not Applicable: indicates that the report is not a primary reference or a systematic review and therefore the quality has not been assessed.

Classes of Research Reports:

A. Primary Reports of New Data Collection:

Class A:

- Randomized, controlled trial

Class B:

- Cohort study

Class C:

- Non-randomized trial with concurrent or historical controls
- Case-control study
- Study of sensitivity and specificity of a diagnostic test
- Population-based descriptive study

Class D:

- Cross-sectional study
- Case series
- Case report

B. Reports that Synthesize or Reflect upon Collections of Primary Reports:

Class M:

- Meta-analysis
- Systematic review
- Decision analysis
- Cost-effectiveness analysis

Class R:

- Consensus statement
- Consensus report
- Narrative review

Class X:

- Medical opinion

METHODS USED TO ANALYZE THE EVIDENCE

Review of Published Meta-Analyses
Systematic Review with Evidence Tables

DESCRIPTION OF THE METHODS USED TO ANALYZE THE EVIDENCE

Not stated

METHODS USED TO FORMULATE THE RECOMMENDATIONS

Not stated

RATING SCHEME FOR THE STRENGTH OF THE RECOMMENDATIONS

Not applicable

COST ANALYSIS

A formal cost analysis was not performed and published cost analyses were not reviewed.

METHOD OF GUIDELINE VALIDATION

Clinical Validation-Pilot Testing
Internal Peer Review

DESCRIPTION OF METHOD OF GUIDELINE VALIDATION

Institute Partners: System-Wide Review

The guideline draft, discussion, and measurement specification documents undergo thorough review. Written comments are solicited from clinical, measurement, and management experts from within the member medical groups during an eight-week period of "Critical Review."

Each of the Institute's participating medical groups determines its own process for distributing the guideline and obtaining feedback. Clinicians are asked to suggest modifications based on their understanding of the clinical literature coupled with their clinical expertise. Representatives from all departments involved in implementation and measurement review the guideline to determine its operational impact. Measurement specifications for selected measures are developed by the Institute for Clinical Systems Improvement (ICSI) in collaboration with participating medical groups following general implementation of the guideline. The specifications suggest approaches to operationalizing the measure.

Guideline Work Group: Second Draft

Following the completion of the "Critical Review" period, the guideline work group meets 1 to 2 times to review the input received. The original guideline is revised as necessary, and a written response is prepared to address each of the suggestions received from medical groups. Two members of the Respiratory Steering Committee carefully review the Critical Review input, the work group responses, and the revised draft of the guideline. They report to the entire committee their assessment of two questions: (1) Have the concerns of the medical groups been adequately addressed? (2) Are the medical groups willing and able to implement the guideline? The committee then either approves the guideline for pilot testing as submitted or negotiates changes with the work group representative present at the meeting.

Pilot Test

Medical groups introduce the guideline at pilot sites, providing training to the clinical staff and incorporating it into the organization's scheduling, computer, and other practice systems. Evaluation and assessment occur throughout the pilot test phase, which usually lasts for three months. Comments and suggestions are solicited in the same manner as used during the "Critical Review" phase.

The guideline work group meets to review the pilot sites' experiences and makes the necessary revisions to the guideline, and the Respiratory Steering Committee reviews the revised guideline and approves it for implementation.

RECOMMENDATIONS

MAJOR RECOMMENDATIONS

The recommendations for the management of community-acquired pneumonia in adults are presented in the form of algorithms, with 22 components, accompanied by detailed annotations. Algorithms are provided for: Community-Acquired Pneumonia in Adults and Outpatient Management. Clinical highlights and selected annotations (numbered to correspond with the algorithms) follow.

Class of evidence (A-D, M, R, X) and conclusion grade (I-III, Not Assignable) definitions are repeated at the end of the "Major Recommendations" field.

Clinical Highlights

1. Triage guidelines to identify patients with lower respiratory infections are provided in this guideline. Patients with two or more of the specified signs/symptoms should be given an urgent provider visit to establish a diagnosis of pneumonia or other serious lower respiratory tract infection. (Annotation 2)
2. All patients suspected of having pneumonia should have a chest x-ray to confirm this diagnosis. (Annotation 3)
3. Application of a clinical prediction rule (a scoring system that determines a Risk Class level based on age, comorbidities, physical, and lab findings) is

strongly encouraged to help determine whether or not hospitalization is indicated. (Annotations 12, 13, 14, 15)

4. Patients who can be safely treated as outpatients will usually respond to a newer generation macrolide (azithromycin or clarithromycin). Doxycycline should be used with caution because of increasing resistance to this agent and should be reserved for use when other options are not available. Older patients or those with substantial co-morbidities will usually respond well to combinations of a beta lactam agent (such amoxicillin/clavulanate) plus a macrolide. Newer generation (so-called "respiratory") fluoroquinolones can be used as first-line agents but should be reserved for use in higher risk or drug intolerant patients in order to slow the emergence of resistance to this class of drugs. (Annotations 17, 18, 20)

Community-Acquired Pneumonia in Adults Algorithm Annotations

2. Schedule Provider Visit

   An urgent provider visit should be scheduled if patient has two or more of the following symptoms of lower respiratory tract infection:

   - rigors*
   - pleuritic chest pain*
   - shortness of breath*
   - chest tightness*
   - deep cough
   - sputum production
   - fever over 100 degrees Fahrenheit lasting more than 72 hours
   - night sweats
   - wheezing

   *The presence of any one of these symptoms may be reason enough for an emergency visit.

3. Obtain Chest X-Ray

   A chest x-ray is essential in confirming the diagnosis of pneumonia. It is also helpful in assessing prognosis. Unnecessary x-rays can be avoided by using clinical findings to guide the decision for a chest x-ray in patients with suspected lower respiratory tract infection. [Conclusion Grade III: See Conclusion Grading Worksheet - Appendix A - Annotation #3 in the original guideline document].

   The absence of any vital sign abnormalities makes a diagnosis of pneumonia less likely and suggests that a chest x-ray is not necessary. It may be prudent to consider an x-ray in patients over age 40, in patients with chronic obstructive pulmonary disease, asthma, and other comorbid illnesses, and in smokers.

   The work group understands that there may be circumstances in which a chest x-ray is not obtained, but a presumptive diagnosis of pneumonia is

made based on a clinical judgment. In this instance, the recommendations following "Pneumonia Diagnosis" (Algorithm Annotation #11) still apply.

If a pleural effusion is present on the initial chest x-ray, then a decubitus film should be considered to determine the amount of the effusion. Pleural effusions in patients with community-acquired pneumonia should be followed. Thoracentesis should be considered if clinically indicated, especially when the effusion layers out to more than 2 cm on a decubitus film.

7. Comorbidities or Clinical Status Suggest Treatment of Lower Respiratory Tract Infection [LRTI]?

   In otherwise healthy patients with no infiltrate and few of the signs below indicative of pneumonia, antibiotic treatment for acute bronchitis is not indicated because most cases of bronchitis in healthy adults are of viral origin. [Conclusion Grade II: See Conclusion Grading Worksheet - Appendix B - Annotation #7 in the original guideline document.]

   If the chest x-ray revealed no infiltrate, other etiologies for symptoms should be considered. If clinical suspicions suggest respiratory infection, then treatment of lower respiratory tract infection should be considered. Although no combination of clinical findings clearly establishes a diagnosis of pneumonia or lower respiratory tract infection, the following signs may suggest the presence of a significant lower respiratory tract infection requiring treatment in patients with other comorbidities:

   - Temperature greater than 100 degrees Fahrenheit (37.8 degrees Celsius)
   - Pulse greater than 100
   - Decreased breath sounds
   - Rales
   - Respiratory rate greater than 20

   If there are signs of acute bacterial infection such as fever or purulent sputum, treatment may be warranted for patients who:

   - have chronic obstructive pulmonary disease
   - are asthmatic (refer to the National Guideline Clearinghouse [NGC] summary of the Institute for Clinical Systems Improvement [ICSI] guideline Diagnosis and Management of Asthma)
   - are smokers
   - have acute exacerbation of chronic bronchitis
   - are immunocompromised
   - are elderly

8. Treat with Macrolide, Doxycycline

   Patients requiring treatment could be given:

   - Macrolides
   - Doxycycline

See Annotation Appendix A in the original guideline document for detailed information on "Pneumonia Antibiotics."

11. Pneumonia Diagnosis

A sputum Gram stain and culture are optional for patients treated in the outpatient setting. Certain epidemiological factors are associated with unusual organisms not effectively treated with the antibiotics recommended in this guideline. (See Discussion and References #11, Table 3, in the original guideline document for a listing of epidemiological and underlying conditions related to specific pathogens.)

Note: The utility of a Gram stain and culture will depend upon the ability of the medical facility to obtain a deep cough specimen, transport it to the lab promptly, and have it properly processed within 1 to 2 hours of collection. After that period of time, yield of various microbial agents (including Streptococcus pneumoniae) decreases. The interpretation of the Gram stain will also depend on the experience of the person reading the stain. Minimum criteria for acceptance of a sputum specimen should be set by the lab (usually less than 25 epithelial cells, 1pf and greater than 10 polymorphonuclear cells/1pf).

12. Calculate Pneumonia Severity Index (PSI)

The decision to hospitalize a patient with community-acquired pneumonia is one of the most important decisions early in the course of a patient's illness. There are no established definitive guidelines that can be used to make this decision. However, there is a prediction rule that can help the clinician identify patients with community-acquired pneumonia who are at low risk for morbidity and mortality and who may be candidates for outpatient treatment. [Conclusion Grade II: See Conclusion Grading Worksheet - Appendix C - Annotation #12 in the original guideline document].

At initial assessment of the patient with pneumonia, if they are under age 50 and without the specified comorbidities and physical exam findings (see original guideline), they are considered to be very low risk for morbidity and mortality and could be treated as outpatients.

The Pneumonia Severity Index (PSI) can be calculated according to the details provided in the original guideline document.

13. Pneumonia Severity Index Less Than 70 Points?
14. Consider Short-Term Hospitalization or Outpatient Intravenous Therapy for 71-90 Points; Hospitalization for >90 Points

Patients with PSI scores of 71 to 90 points may, in general, be treated safely as outpatients. There are circumstances, however, under which hospitalization should be considered (hypoxia, other comorbidities). Other alternatives to consider would be short-term hospitalization (<24 hours observation unit), or outpatient intravenous therapy. Patients with PSI scores of greater than or equal to 91 total points are at significantly increased risk for morbidity and mortality such that inpatient therapy should be considered. Hospital management is out of the scope of this guideline.

15. Outpatient Management

Patients with a PSI score of less than 91 (Class I through III) are at low risk for morbidity and mortality; many of these patients may be candidates for outpatient treatment. However, the clinician is cautioned that other factors should be considered prior to the decision to use outpatient treatment: physician judgment, ability to maintain oral intake, history of substance abuse, cognitive impairment, ability to carry out activities of daily living, patient preference. In addition, hypoxic patients should be considered for hospitalization.

Patients who are deemed unsuitable for outpatient management could be considered for management with:

- Short stay observation hospitalization (less than 24 hours)
- Traditional inpatient care
- Home intravenous (IV) antibiotics

If a pleural effusion is present on the initial chest x-ray, then a decubitus film should be considered to determine the amount of the effusion. Pleural effusions in patients with community-acquired pneumonia should be followed. Thoracentesis should be considered if clinically indicated, especially when the effusion layers out to more than 2 cm on a decubitus film.

16. Older Age and/or Other Comorbidities or Risk Factors for Resistant or Unusual Pathogens?

Patients in older age group, or those with co-morbid illnesses may be more predisposed to infection with organisms not adequately covered by macrolides alone. Broader spectrum antibiotic therapy should be considered in addition to macrolides. Recent antibiotic therapy, nursing home residents, or high prevalence of antibiotic-resistant organisms in the community are also considerations for broader spectrum antibiotic therapy.

17. Second Generation Macrolide Such as Azithromycin or Clarithromycin

Macrolides, especially newer ones such as azithromycin or clarithromycin, are usually adequate therapy for younger and otherwise healthy patients. Increasing resistance to doxycycline in Streptococcus pneumoniae limits the usefulness of this agent. It can be used cautiously, but generally should be reserved for situations where other options are not feasible.

See Annotation Appendix A, "Pneumonia Antibiotics," in the original guideline document for details on typical pathogens, doses, costs, and use in pregnancy/lactation.

18. First-Line Antibiotics: Amoxicillin/Clavulanate + Macrolide, or Cefuroxime Axetil/Cefpodoxime/Cefprozil + Macrolide, or Fluoroquinolones

For patients who have other modifying factors, such as age or other comorbidities, antibiotic choices are slightly different. Patients who have recently been on antibiotics or steroids or who have very advanced chronic obstructive pulmonary disease should be started on a "respiratory" fluoroquinolone or a combination of amoxicillin/clavulanate plus a macrolide or second-generation cephalosporin plus a macrolide. If there is suspected macro-aspiration of oral flora, use of amoxicillin/clavulanate plus or minus a macrolide is preferred.

See Annotation Appendix A, "Pneumonia Antibiotics," in the original guideline document for details on typical pathogens, doses, costs, and use in pregnancy/lactation.

19. Drug Intolerance?
20. Second-Line Antibiotics

Broad spectrum fluoroquinolones are recommended for patients who do not tolerate any of the first line drugs.

See Annotation Appendix A, "Pneumonia Antibiotics," in the original guideline document for details on typical pathogens, doses, costs, and use in pregnancy/lactation.

21. Patient Education

Much of the information can be provided directly by the physician. However, a discussion should be supplemented with written materials. See the Discussion and References section in the original guideline document for details regarding questions raised in patient focus group sessions.

Key information messages to be given to the patients include a description of the cause and seriousness of community-acquired pneumonia, measures to be taken by the patient to speed recovery and relieve symptoms, criteria for follow-up, help in deciding when to return to work, secondary prevention measures, and other important issues of concern to the patient (refer to the original guideline document for details).

22. Follow-Up

Criteria for follow-up include:

- difficulty breathing
- worsening cough
- worsening or onset of rigors
- fever persisting more than 48 hours
- medication intolerance

Common clinical practice is to obtain a follow-up chest x-ray in patients with pneumonia to ensure resolution of the infiltrate, especially in patients who are 40 years of age and older and/or smokers. Barring complications, a follow-up x-ray is recommended at 6 to 8 weeks. Patients with multilobar involvement

should at least show improvement, if not resolution, by then. A non-resolving infiltrate at 6 to 8 weeks requires further evaluation. Lung cancer is often suspected with non-resolving infiltrates.

It is suggested that patients treated as outpatients should be contacted by the health care team within 24 to 48 hours after commencing therapy to assess their progress.

Definitions:

Rating Scheme for the Strength of the Evidence

Evidence Grading System: Classes of Research Reports:

A. Primary Reports of New Data Collection:

Class A:

- Randomized, controlled trial

Class B:

- Cohort study

Class C:

- Non-randomized trial with concurrent or historical controls
- Case-control study
- Study of sensitivity and specificity of a diagnostic test
- Population-based descriptive study

Class D:

- Cross-sectional study
- Case series
- Case report

B. Reports that Synthesize or Reflect upon Collections of Primary Reports:

Class M:

- Meta-analysis
- Systematic review
- Decision analysis
- Cost-effectiveness study

Class R:

- Consensus statement
- Consensus report
- Narrative review

Class X:

- Medical opinion

Conclusion Grades:

Grade I: The evidence consists of results from studies of strong design for answering the question addressed. The results are both clinically important and consistent with minor exceptions at most. The results are free of any significant doubts about generalizability, bias, and flaws in research design. Studies with negative results have sufficiently large samples to have adequate statistical power.

Grade II: The evidence consists of results from studies of strong design for answering the question addressed, but there is uncertainty attached to the conclusion because of inconsistencies among the results from different studies or because of minor doubts about generalizability, bias, research design flaws, or adequacy of sample size. Alternatively, the evidence consists solely of results from weaker designs for the question addressed, but the results have been confirmed in separate studies and are consistent with minor exceptions at most.

Grade III: The evidence consists of results from studies of strong design for answering the question addressed, but there is substantial uncertainty attached to the conclusion because of inconsistencies among the results from different studies or because of serious doubts about generalizability, bias, research design flaws, or adequacy of sample size. Alternatively, the evidence consists solely of results from a limited number of studies of weak design for answering the question addressed.

Grade IV: The support for the conclusion consists solely of the statements of informed medical commentators based on their clinical experience, unsubstantiated by the results of any research studies.

CLINICAL ALGORITHM(S)

Detailed and annotated clinical algorithms are provided for:

- Community-Acquired Pneumonia in Adults
- Outpatient Management

EVIDENCE SUPPORTING THE RECOMMENDATIONS

TYPE OF EVIDENCE SUPPORTING THE RECOMMENDATIONS

The guideline contains an annotated bibliography and discussion of the evidence supporting each recommendation. The type of supporting evidence is classified for selected recommendations (see "Major Recommendations").

In addition, key conclusions contained in the Work Group's algorithm are supported by a grading worksheet that summarizes the important studies

pertaining to the conclusion. The type and quality of the evidence supporting these key recommendations (i.e., choice among alternative therapeutic approaches) is graded for each study.

BENEFITS/HARMS OF IMPLEMENTING THE GUIDELINE RECOMMENDATIONS

POTENTIAL BENEFITS

- Patients with community-acquired pneumonia may be accurately diagnosed and appropriately treated.
- Patients at low risk may be treated as outpatients, rather than hospitalized.
- Patients may have a shorter duration of symptoms and may return to work or normal routines sooner.

Subgroups Most Likely to Benefit:

Patients who are low risk (based on Pneumonia Severity Index)

POTENTIAL HARMS

- Caution is urged against unnecessary use of fluoroquinolones to avoid the development of microbial resistance.
- Risks to child and benefit to mother must be carefully weighed when using antibiotics during pregnancy and lactation.
- There are clinically important drug interactions between macrolides and other drug classes, including anticonvulsants, cisapride, theophyllines, and others.
- Erythromycin can cause gastrointestinal side effects.

Subgroups Most Likely to Be Harmed:

Pregnant and lactating women, because of potential risks to child

QUALIFYING STATEMENTS

QUALIFYING STATEMENTS

- These clinical guidelines are designed to assist clinicians by providing an analytical framework for the valuation and treatment of patients, and are not intended either to replace a clinician's judgment or to establish a protocol for all patients with a particular condition. A guideline will rarely establish the only approach to a problem.
- The work group's antibiotic recommendations are based on the epidemiology of community-acquired pneumonia and the expected susceptibility of pathogens. The recommendations are for the most part based on medical opinion rather than clinical studies. This guideline, as well as others that are available, require validation.
- Prediction rule limitations: The prediction rule was adequately validated; however, about half of the patients classified in classes I-III were actually hospitalized during the study period. It is not clear whether this subset of patients would have had similar outcomes had they been treated as

outpatients as suggested by the prediction rule. The clinician is cautioned to consider hospitalization for those patients whose overall clinical appearance does not seem favorable for outpatient treatment.

- This clinical guideline should not be construed as medical advice or medical opinion related to any specific facts or circumstances. Patients are urged to consult a health care professional regarding their own situation and any specific medical questions they may have.

IMPLEMENTATION OF THE GUIDELINE

DESCRIPTION OF IMPLEMENTATION STRATEGY

Once a guideline is approved for general implementation, a medical group can choose to concentrate on the implementation of that guideline. When four or more groups choose the same guideline to implement and they wish to collaborate with others, they may form a guideline action group.

In the guideline action group, each medical group sets specific goals they plan to achieve in improving patient care based on the particular guideline(s). Each medical group shares its experiences and supporting measurement results within the action group. This sharing facilitates a collaborative learning environment. Action group learnings are also documented and shared with interested medical groups within the collaborative.

Currently, action groups may focus on one guideline or a set of guidelines such as hypertension, lipid treatment, and tobacco cessation.

The following detailed measurement strategies are presented to help close the gap between clinical practice and the guideline recommendations.

Priority Aims for Medical Groups When Using This Guideline

1. Improve the assessment of need for hospitalization for patients with community-acquired pneumonia (CAP).

   Possible measures of accomplishing this aim:

   a. Percentage of patients with CAP where assessment included documentation of comorbid illnesses and physical exam findings
   b. Percentage of patients with documentation of use of the Pneumonia Severity Index (PSI) with less than 70 points who are treated as outpatients
   c. The percentage of patients diagnosed with CAP with PSI scores >90 points who are not hospitalized, who have documentation in their records of the reason not to hospitalize
   d. Percentage of patients with CAP initially treated as outpatients who require hospitalization within the first 10 days of care
2. Improve the selection of appropriate treatment for patients with pneumonia based on risk factors.

   Possible measure of accomplishing this aim:

a. Percentage of patients with pneumonia who were prescribed the recommended combination of antibiotics

3. Increase the appropriate use of chest x-ray to improve the accuracy of diagnosis of community-acquired pneumonia.

   Possible measure of accomplishing this aim:

   a. Percentage of patients with a diagnosis of CAP who had a chest x-ray to confirm diagnosis

INSTITUTE OF MEDICINE (IOM) NATIONAL HEALTHCARE QUALITY REPORT CATEGORIES

IOM CARE NEED

Getting Better

IOM DOMAIN

Effectiveness
Patient-centeredness

IDENTIFYING INFORMATION AND AVAILABILITY

BIBLIOGRAPHIC SOURCE(S)

Institute for Clinical Systems Improvement (ICSI). Community-acquired pneumonia in adults. Bloomington (MN): Institute for Clinical Systems Improvement (ICSI); 2003 Dec. 42 p. [46 references]

ADAPTATION

Not applicable: The guideline was not adapted from another source.

DATE RELEASED

1999 Aug (revised 2003 Dec)

GUIDELINE DEVELOPER(S)

Institute for Clinical Systems Improvement - Private Nonprofit Organization

GUIDELINE DEVELOPER COMMENT

Organizations participating in the Institute for Clinical Systems Improvement (ICSI): Affiliated Community Medical Centers, Allina Medical Clinic, Altru Health System, Aspen Medical Group, Avera Health, CentraCare, Columbia Park Medical Group, Community-University Health Care Center, Dakota Clinic, ENT Specialty Care, Fairview Health Services, Family HealthServices Minnesota, Family Practice

Medical Center, Gateway Family Health Clinic, Gillette Children's Specialty Healthcare, Grand Itasca Clinic and Hospital, HealthEast Care System, HealthPartners Central Minnesota Clinics, HealthPartners Medical Group and Clinics, Hutchinson Area Health Care, Hutchinson Medical Center, Lakeview Clinic, Mayo Clinic, Mercy Hospital and Health Care Center, MeritCare, Mille Lacs Health System, Minnesota Gastroenterology, Montevideo Clinic, North Clinic, North Memorial Care System, North Suburban Family Physicians, Northwest Family Physicians, Olmsted Medical Center, Park Nicollet Health Services, Pilot City Health Center, Quello Clinic, Ridgeview Medical Center, River Falls Medical Clinic, Saint Mary's/Duluth Clinic Health System, St. Paul Heart Clinic, Sioux Valley Hospitals and Health System, Southside Community Health Services, Stillwater Medical Group, SuperiorHealth Medical Group, University of Minnesota Physicians, Winona Clinic, Ltd., Winona Health

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SOURCE(S) OF FUNDING

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GUIDELINE COMMITTEE

Respiratory Steering Committee

COMPOSITION OF GROUP THAT AUTHORED THE GUIDELINE

Work Group Members: Mary Ann Kish, MD (Work Group Leader) (HealthPartners Medical Group) (Infectious Disease); Margaret Gill, MD (Mayo Clinic) (Family Medicine); Sirri Nomo-Ongolo, MD (RiverWay Clinics) (Family Medicine); Salim Kathawalla, MD (Park Nicollet Health Services) (Pulmonology); Stephen Kolar, MD (HealthEast Clinics) (Internal Medicine); Mark Nyman, MD (Mayo Clinic) (Internal Medicine); John Rotschafer, PharmD (HealthPartners Medical Group) (Pharmacy); Beth Green, MBA, RRT (Institute for Clinical Systems Improvement) (Measurement Advisor); Nancy Greer, PhD (Institute for Clinical Systems Improvement) (Evidence Analyst); Pam Pietruszewski, MA (Institute for Clinical Systems Improvement) (Facilitator)

FINANCIAL DISCLOSURES/CONFLICTS OF INTEREST

In the interest of full disclosure, the Institute for Clinical Systems Improvement (ICSI) has adopted a policy of revealing relationships work group members have with companies that sell products or services that are relevant to this guideline topic. The reader should not assume that these financial interests will have an adverse impact on the content of the guideline. Readers of the guideline may assume that only work group members listed below have potential conflict of interest to disclose.

John Rotschafer, PharmD. has received grant support from Ortho-McNeil, Pfizer/Pharmacia, Aventis, Bayer, Eli Lilly, Bristol Meyers Squibb, and Advancis. He is a consultant for Ortho-McNeil, Pfizer/Pharmacia, Advancis, Beyer, Roche, Bristol Meyers Squibb, and Wyeth. He is a member of the speakers bureau for Ortho-McNeil, Pfizer/Pharmacia, Aventis, Bayer, Roche, Bristol Meyers Squibb, and Wyeth.

No other work group members have potential conflict of interest to disclose.

ICSI's conflict of interest policy and procedures are available for review on ICSI's website at www.icsi.org.

GUIDELINE STATUS

This is the current release of the guideline.

This guideline updates a previously released version: Community-acquired pneumonia in adults. Bloomington (MN): Institute For Clinical Systems Improvement (ICSI); 2002 May. 41 p.

The next scheduled revision will occur within 12 months.

GUIDELINE AVAILABILITY

Electronic copies: Available from the Institute for Clinical Systems Improvement (ICSI) Web site.

Print copies: Available from ICSI, 8009 34th Avenue South, Suite 1200, Bloomington, MN 55425; telephone, (952) 814-7060; fax, (952) 858-9675; Web site: www.icsi.org; e-mail: icsi.info@icsi.org.

AVAILABILITY OF COMPANION DOCUMENTS

The following is available:

- Community-acquired pneumonia. In: ICSI pocket guidelines. April 2003 edition. Bloomington (MN): Institute for Clinical Systems Improvement, 2003 Mar. pp. 206-213.

Print copies: Available from ICSI, 8009 34th Avenue South, Suite 1200, Bloomington, MN 55425; telephone, (952) 814-7060; fax, (952) 858-9675; Web site: www.icsi.org; e-mail: icsi.info@icsi.org.

PATIENT RESOURCES

None available

NGC STATUS

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